U.S. Army Corps of Engineers

Tulsa District
Project Update

Tulsa District
January 2007

Tenkiller Lake, Oklahoma
Auxiliary Spillway Dedicated

Weather threatened and temperatures plummeted as officials and guests gathered to dedicate the new auxiliary spillway at Tenkiller Ferry Lake, Nov. 30, 2006. U.S. Representative Dan Boren; Oklahoma State Senator Jim Wilson; Col. Miroslav Kurka, Tulsa District Commander; John Roberts, Deputy District Engineer for Project Management; and Randel Mead, dam safety manager, addressed the crowd at the overlook. Most had driven through violent storms to make it to the ceremony celebrating completion of Tulsa District's latest civil works construction project. The sun broke through just long enough for the group to travel to the spillway for the actual ribbon cutting.

The numbers are staggering in this massive project - often hard to grasp - 35 miles of holes drilled for explosives, the ability to pass enough water to fill almost 180 swimming pools every second, and huge gates that take more than a half hour to fully open.

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"Without this new spillway, the existing project spillway would suffer extensive erosion and, ultimately, catastrophic failure if the probable maximum flood were to occur. Such a condition would cause major flooding, including the possibility of loss of human life in the downstream community of Gore, Oklahoma."

Bill Smith, Project Manager

Col. Miroslav Kurka

Commander, Tulsa District

We had a terrific year in 2006. We executed a record military program and completed a very large number of civil works projects to the delight of sponsors, stakeholders and the public. We've provided excellent support to hurricane ravaged areas and the Global War on Terrorism, and enhanced our reputation as the premier engineering organization in this part of the country.

The U.S. Army Corps of Engineers is decisively engaged in several critical activities. There is a huge workload in the Baltimore and Fort Worth Districts' military construction programs. New Orleans District's civil works workload is similarly very large and Sacramento District has the largest amount of levees in the nation (over 580 miles) that are affected by guidance on the inspection of completed civil works. All of this, plus ongoing support to the Global War on Terrorism, is creating unprecedented opportunities for people to serve their country in the U.S. Army Corps of Engineers.

We have folks deployed to Iraq and Afghanistan and who are supporting the efforts of Sacramento District in California and in the Mississippi Valley Division in New Orleans.

The future is bright for Tulsa District as we continue to volunteer and get involved in Corps major missions. District employees have been magnificent in their support of the Global War on Terrorism and hurricane relief, and I know they will give their continued full efforts.

I ask that you remember our eleven Tulsa District members who are deployed in Iraq and Afghanistan, as well as their families here in the states.

Tulsa District has great people and is a vital part of the great Southwestern Division Team. We are absolutely relevant, ready, responsive, and reliable, and we are ready for the challenges of working on the nationally significant projects.

ESSAYONS!

"District employees have been magnificent in their support of the Global War on Terrorism and hurricane relief."

Corps of Engineers

Missions

- The mission of the United States Army Corps of Engineers, the world's preeminent public engineering agency, is to provide quality, responsive engineering services to the nation and its armed forces. The Corps plans, designs, builds and operates water resources projects; designs and manages military facility construction for the Army and Air Force at home and abroad; provides design and construction management support for other Defense and Federal agencies; cleans hazardous areas across the nation through the Formerly Used Defense Sites program and the Formerly Utilized Sites Remedial Action Program; and conducts state-of-the-art engineering research and design at its Engineer Research and Development Center.
- Over its 230 year history, the Corps of Engineers mission has evolved. What began as a military engineering mission for the nation in the 18th Century adapted into a major peacetime mission in the 19th Century. The Corps helped develop a vast water resource infrastructure, initiated development of the first national parks, and linked navigable waterways together to move commerce across states.
- In the 20th Century, the Corps civil mission changed again with the adoption of more water resources development and management duties, including flood control, hydropower, recreation, water supply, shore protection, and disaster relief. More recently, environmental protection and restoration missions were entrusted to the Corps.
- As society's requirements and values have changed, the Corps programs have changed to reflect new national priorities.

U.S. Army Corps of Engineers ®

Military Program

Tulsa District continued its tradition of providing exceptional military customer support in 2006. We awarded nine of nine major military construction contracts within the fiscal year, a true accomplishment considering the challenges of construction cost escalation through 2006. Fiscal year 2006 MILCON projects awarded were:

- Fort Sill Railroad Equipment Facility (2nd Quarter Award)
- McAlester Army Ammunition Plant (AAP) Strategic Loading Facility (2nd Quarter Award)
- Sheppard Air Force Base (AFB) T6A COMBS Warehouse (2nd Quarter Award)
- Sheppard AFB Student Dormitory (2nd Quarter Award)
- Tinker AFB 31st Combat Communications Squadron Operations (2nd Quarter Award)
- Tinker AFB Upgrade Building 3001 Infrastructure, Phase II (2nd Quarter Award)
- Fort Sill Family Housing Replacement (3rd Quarter Award)
- Fort Sill Airfield Fire Station (4th Quarter Award)
- Vance AFB Enhance Force Protection (4th Quarter Award)

In addition, two minor MILCON projects (Ammunition Storage and a Front Gate Improvement) and one Energy Conservation Investment Program (ECIP) project were awarded at McAlester AAP in fiscal year 2006.

Of our fiscal year 2007 President's Budget MILCON projects, both were ready to advertise on Sept. 29, 2006. Award of all fiscal year 2007 projects is pending decisions made in Congress regarding the Joint Resolution which will provide MILCON funding in lieu of a MILCON appropriations bill. Most likely, funds will not be available for contract award until after April 1, 2007.

- Fort Sill Whole Neighborhood Revitalization (Family Housing Repair)
- McAlester AAP Fabrication Facility

Design was not begun on the fiscal year 2007 BRAC projects until April 2006 for Army and June 2006 for Air Force. Progress has been good and contract awards are scheduled in the 3rd quarter of fiscal year 2007 (pending the joint resolution) for the following projects:

- Fort Sill Restationing of the Air Defense Artillery School (multiple contracts)
- Tinker AFB Expand Fuel Hydrant System (Air Force Reserve)
- Vance AFB ADAL Aircraft Parking Apron
- Vance AFB ADAL Survival Equipment Shop
- Vance AFB Renovate Simulator Facility
- Vance AFB Squadron Facilities

The Vance AFB project to construct an IFF No Drop Range will not be awarded in fiscal year 2007 because of the timelines for real estate acquisition and National Environmental Policy Act requirements.

In addition to the $110 million in MILCON/Family Housing contracts awarded in fiscal year 2006, we awarded another $50 million in operations and maintenance (O&M) contracts for the installations, a significant increase over last year. We worked to the last minute of the last day of the fiscal year awarding over 100 contracts, task orders, and modifications in the last week of the fiscal year. This reimbursable work is critical to the installations and helps our District maintain a critical mass of professionals, both in the District office and in our resident offices, to be able to continue to provide quality services.

The BRAC project at Fort Sill has been a model of regional teamwork, following closely on the heels of the regional execution of work at Fort Bliss. At Fort Sill, we will be using the "product line" contracts from Little Rock District for dining halls, and from Fort Worth District for barracks. Tulsa District will provide the non-standard facilities through design/build contracts as well as the

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Air Traffic Control Tower at Sheppard Air Force Base

Military Program

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vehicle maintenance shops through Tulsa's "product line" contract. The product line contracts were awarded in August and September of 2006 with the first work issued for Fort Bliss. The BRAC work will incorporate the first stages of Army MILCON Transformation and will attempt to adopt industry standards and gain cost efficiencies through repetition of multiple identical buildings.

Although not funded by Department of Defense, we awarded a hangar construction project for the Department of Homeland Security at the Will Rogers Airport and a Federal Agent Facility for the National Nuclear Security Agency at the Pantex Plant in Amarillo, Texas.

Quality facilities which have been delivered to the military installations in the last half of 2006 include:

- General Maintenance Facility at Fort Sill, August 2006
- Directorate of Logistics Maintenance Facilities, Phase 1 and 2 at Fort Sill, August 2006
- 300 Person Student Dormitory at Sheppard AFB, October 2006
- Control Tower and Airfield Operations Complex at Sheppard AFB, October 2006
- 300 family housing residences (duplexes) at Fort Sill – turned over periodically through Dec. 2006

Sheppard AFB, F-22 Technical Training Facility

Military customer surveys for fiscal year 2006 rated Tulsa District second overall in the Corps of Engineers for overall level of satisfaction.

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Auxiliary Spillway Dedicated

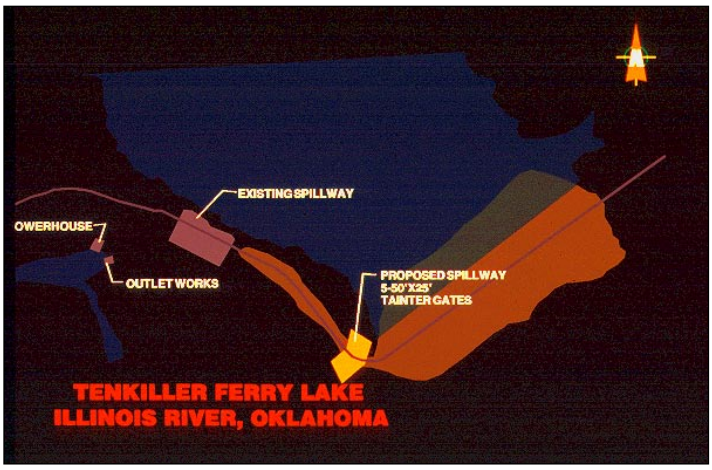
from page 1

The need for an auxiliary spillway was identified in the early 1980s when a nationwide dam safety study determined that Tenkiller Lake did not have sufficient flood release capabilities. The nearly $30 million, Federally-funded construction project was completed in two phases. Phase I involved relocation of water, power, and telephone lines; excavation; and construction of the gated structure. Each of the five gates is approximately 35 feet tall and 50 feet wide. Phase II comprised paving the new roadway and building the approach channel from the new spillway to the lake. The entire project took seven years. During construction, more than 500,000 cubic yards of rock were excavated. A bridge was built across the channel for State Highway 100 traffic.

There were many challenges, including a slide when the new highway fill was placed on an ancient fault not detected during investigations for the project. Mead expanded on another. "Concrete generates heat when it cures, and placing large volumes in small areas can result in temperatures so high that the concrete can be damaged." The new spillway was constructed using about 40,000 cubic yards of concrete which is enough to cover a football field 7.5-feet deep. He explained that special cement (low heat of hydration) and a high percentage of fly ash were used in the concrete to control the temperature during curing, and that temperature probes were placed in the concrete to monitor the temperatures during curing.

A mountain of rock was removed to make way for the construction of the spillway.

Tenkiller Dam is located on the Illinois River 7 miles northeast of Gore, Oklahoma, and 22 miles southeast of Muskogee, Oklahoma. Construction of the Tenkiller Lake was completed in May 1952.



Col. Kurka praised the team that brought the project to fruition, and John Roberts noted the political support that is vital to funding. The dignitaries emphasized the importance of Tenkiller Lake and the many benefits it provides to citizens of the area.

Mead summed up the feelings of many of those gathered who braved the weather to be at the dedication. "It is a rare pleasure to get to work on a large dam construction project today, and I believe I can speak for all the engineers and construction office personnel by saying we enjoyed being a part of such a unique project that will be here for many decades after we are gone."

The new spillway was constructed using about 40,000 cubic yards of concrete which is enough to cover a football field 7.5-feet deep.

Water Safety Program

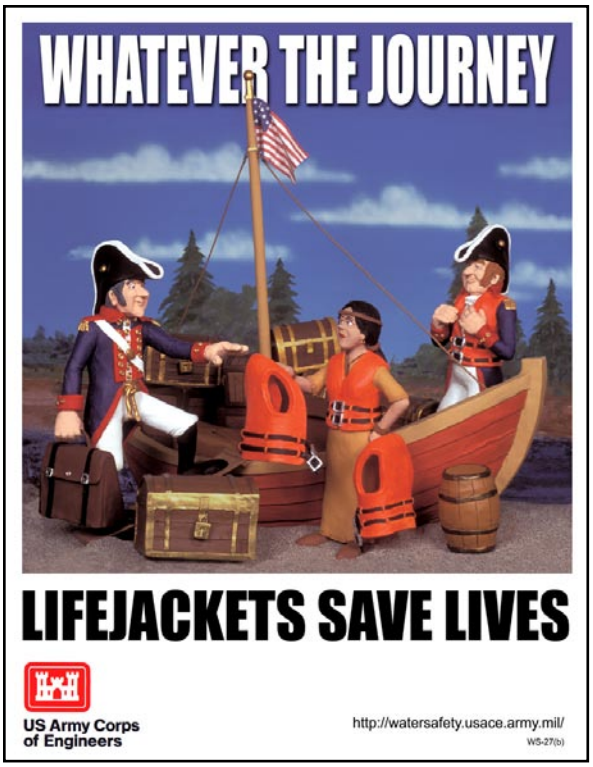
On all fronts, the Tulsa District Water Safety Team plans to make any and all initiatives bigger and better than years prior. We strive to keep up with the changes in the recreation world and to keep the interest of our visiting public and customers. 2006 ended with a total of 23 drownings within the Tulsa District. Each life is precious; almost every accident that occurred was preventable, and this is the heart of our message. The Tulsa District, as a whole, takes the safety of our projects and the safety of our visiting public seriously. In fact, Tulsa District sprung to action in June 2006 to ban the use of "kite tubes" on all Tulsa District lakes due to the increased report of accidents resulting from the use of these products. Our goal for 2007, and every year, is zero fatalities.

2006 proved to be a busy and productive year for the Tulsa District Water Safety Program. The Water Safety Team consists of several rangers from all areas of the Tulsa District and representatives from the Safety Office, Public Affairs, and management officials of the Tulsa District. The Water Safety Team began the year revitalized and with a mission list in hand. Primary missions included expanding our water safety education programs for local schools, participating in increasing numbers of high exposure events (i.e. boat and tackle shows, outdoors expos, etc.), better utilizing the media for exposure of water safety issues, increasing our availability of handouts and visual water safety reminders for the public, and building upon existing partnerships and developing new ones.

The Tulsa District is proud of our efforts to take water safety education into the classrooms of our local schools. These programs allow us the opportunity to gauge the level of awareness that the kids possess relative to water safety as well as an avenue to send home with them information that they can share with their entire families. Besides the classroom programs, several outdoor clinics are conducted annually throughout the District to promote water safety among school age children. In 2006, we shared our water safety messages with more than 5,000 kids.

We threw our names in the hat to attend every boat and tackle show, outdoor expo, and parade that we possibly could in 2006. From Tulsa to Oklahoma City, we set up booths to hand out literature and water safety items, and our ranger patrol boats logged many miles in parades. These events allowed us to make over 99,000 contacts with persons outside of our recreation areas.

The media always responds to emergency situations, but we wanted to try to solicit their interest to work with them to advertise water safety reminders and notices. Accidents do happen, of course, but the repetition of a message bears great weight, and the media gives us a tremendous outlet to voice these messages. The Tulsa District Water Safety Team took part in three different media events in 2006. It is nearly impossible to quantify how many persons we may have reached, but these opportunities are invaluable to us.



Not many people in the State of Oklahoma have traversed a highway or driven around one of our many lakes and not noticed marquees bearing water safety messages. These are big and obvious, but we take many other measures within our recreation areas to share information as well. The Tulsa District participates in the loaner board program, in which we erect "loaner boards" that offer use of PFDs (personal flotation devices) to the visiting public that may find themselves without one for themselves or their children. These boards are constructed, maintained and stocked by Tulsa District employees at their respective lakes. Most of the PFDs are provided by organizations that we partner with, like the Safe Kids Coalition of Tulsa. We have various types of signs and banners in the recreation areas, and free literature and promo items (i.e. coloring books, floating key chains, etc.) available at park kiosks

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Tulsa District's

Operations & Maintenance

Tulsa District's Major Maintenance Program has consistently been under funded resulting in an increasing backlog of necessary maintenance requirements.

During fiscal year 2006, Tulsa District was only able to award one major maintenance contract for a total of $500,000 while the yearly growing major maintenance requirement approximates $9.0 million. The following table details the current backlog of both regular and critical unfunded major maintenance requirements:

	Regular Maintenance	Critical Maintenance
Hydropower	$51.0 M	$11.5 M
Flood Damage Reduction	$42.8 M	$19.9 M
Navigation	$31.1 M	$3.2 M
Recreation	$68.7 M	$1.5 M
Total	$193.6 M	$36.1 M

(M = millions)

In an effort to better operate, as well as express the current trend to our stakeholders, Tulsa District is currently in the process of developing Five Year Development Plans (FYDP) for each of its lake projects. These plans will provide a financial requirement outlook for the next five years as well as a comprehensive list of necessary major maintenance requirements based on the precept of risk and reliability of the structure.

The FYDP defines the funding history and future optimum long-term funding needs to operate and maintain the District's projects in an efficient and reliable manner consistent with authorized project purposes while minimizing risk to lives and property.

Water Safety

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or from the gate shacks. Our intentions for 2007 are to increase the amounts and types of information that we can make available to the public. Within our recreation areas and surrounding communities, we spread the word to more than 77,000 members of the visiting public in 2006.

In a day of decreased budgets and fewer personnel, it is imperative that we nurture existing partnerships and that we continue to foster new relationships. Tulsa District has had a long-standing partnership with the Safe Kids Coalition of Tulsa, and in 2006 we relied on this relationship. Safe Kids supports our loaner board program and has committed to increased donations of PFDs. They are also quick to supply us with additional hand out items and literature as well as bearing most of the responsibility of our coordination with the media. The Tulsa District Water Safety Team has offered further support to the Oklahoma Highway Patrol, Lake Patrol Division, with regards to their personal watercraft training process for the "Kyle Williams Act". Offering the training, and trying our best to ensure that all those that need it get it, benefits the Lake Patrol Division and the Corps of Engineers. Both of these partnerships yield tremendous benefits for all involved and help us all to accomplish things that we might not be able to on our own.

Arkansas City Local Flood Damage Reduction Project Dedicated

Remember Halloween 1998?

If you lived in Arkansas City, Kansas, you would. That year, a two-day deluge led to the worst flood of the century in a city that had already seen its share of flooding.

The flood that began Halloween day 1998 forced more than 2,000 residents from their homes and caused millions of dollars in damages.

Rep. Todd Tiahrt, Kansas, said the devastation of the 1998 flood spurred him to put funding the levee project at the top of his agenda.

In August 2006, a dedication ceremony marked the completion of a local flood protection system designed to help protect much of Arkansas City from river flooding. The project has spanned decades and involved the work of city, state, and Federal officials since 1970.

Bill Smith was project manager and Steve Rous was quality assurance representative.

The project consisted of five miles of levee along the Arkansas River, one and a half miles along the Walnut River, and the rechannelization of two miles of the Walnut River, as well as all associated drainage structures.

Arkansas City lies at a bend along the Walnut River

Ribbon Cutting (above)

U.S. Representative Todd Tiahrt cuts the ribbon to officially dedicate the Arkansas City, Kansas, local flood protection project.

(From left)

Ed Trimmer, State Representative from Winfield, Kansas

Kasha Kelly, State Representative from Arkansas City, Kansas

Arleta Rice, Arkansas City Commissioner

Todd Tiahrt, U.S. Representative

Greta Goodwin, Kansas State Senator from Winfield

Patrick McDonald, Mayor, Arkansas City

John Roberts, Deputy District Engineer for Project Management, Tulsa District, Corps of Engineers

Curtis Freeland, Arkansas City

Mel Thompson, of U.S. Senator Pat Roberts' office

Materials used included:

- 1.3 million cubic yards of fill;
- 1 million cubic yards of channel excavation; and
- 250,000 tons of rock.

Speaking at the ceremony, John Roberts, Deputy District Engineer for Project Management, said, "The project was built in three phases with three different contractors. Quite remarkably, however, it was completed without a single construction contract claim and at a cost which was $13 million less than the original construction estimate."

He praised the long line of officials who have championed the project and noted the difficulty in obtaining funds in times of an austere budget.

As Halloween 2006 approached, Arkansas City residents had much less to fear.

Western States Watershed Study

The Western States Watershed Study is one of five national studies being conducted under the authority of Public Law 109-103. The fiscal year 2006 Energy and Water Development Appropriations Act (PL 109-103) directs the Assistant Secretary of the Army for Civil Works to conduct, at full Federal expense, comprehensive analyses that examine multi-jurisdictional use and management of water resources on a watershed or regional scale. Project management for the two year study, scheduled to be completed in May 2008, is being accomplished by the Tulsa District.

Population growth is continuing at an unprecedented rate in the west with ramifications not only for cities but rural communities and agricultural areas. At the same time, public support continues to grow for in-stream uses, which include bays and estuaries, for such purposes as fish and wildlife habitat, recreation, and water quality protection, placing additional demands on a limited resource.

The Western Governor's Association (WGA) acts as a center of innovation and promotes shared development of solutions to regional problems. In 1965, the WGA adopted a resolution creating the Western States Water Council (WSWC) to address a broad spectrum of water resource challenges facing the west. The WSWC completed a report on "Water Needs and Strategies for a Sustainable Future" which was released by the WGA in June 2006.

The following are study topics being considered:

- Drought, Natural Hazards and Climate Change Preparedness
- Watershed Tools and Collaborative Planning
- State, Tribal, and Federal Collaboration Initiatives
- Infrastructure Needs
- Policies and Programs.

To the extent possible, the Western States Watershed Study activities will be conducted in a collaborative manner and include the development of strategic plans for future activities consistent with the overarching goal to help implement several high priority recommendations identified in the June 2006, "Water Needs and Strategies for a Sustainable Future" report. If applicable, information from the study activities will also be used to help identify any unique circumstances that may present a valid basis for exceptions to existing policies.

Additional topics of interest to the WGA/WSWC that would be addressed by others include the development of a Federal agency protocol regarding the protection of species covered by the Endangered Species Act and the future resolution of Indian water right claims.

Emergency Response

Tulsa District Responds to Ice Storm Emergency

by Mary Beth Hudson

Will Rogers, one of Oklahoma's favorite sons once said, "Everybody always talks about the weather, but nobody does anything about it." All these years later, people in Oklahoma are still talking about the weather – this time the blizzard of January 2007 – and some Corps employees are doing something about its aftermath through their emergency response roles.

Storms hit the state early each morning from Friday, Jan. 12, through Sunday, Jan. 14. By the time they cleared, all of Oklahoma's 77 counties were included in a Federal emergency declaration, 32 people were dead, the eastern part of the state was ravaged by crippling ice, and tens of millions of dollars of damage had been done.

The blizzard left beauty and destruction in its wake. It coated each limb, branch, leaf, and twig with layers of eerily striking, tragically heavy ice. Branches and trees were weighted down and crashed onto ice-burdened lines. An estimated 15,000 power poles fell, and more than 125,000 people lost electricity.

As soon as the Federal Emergency Management Agency (FEMA) assigned the Corps the emergency power mission, Southwestern Division's Power Response Team from Tulsa District mobilized. Although some members were themselves victims of the storm and people and equipment from the 249th Engineering Battalion "Prime Power" and the Corps emergency power contractor, IAP Worldwide Services, had to come from several states and travel through icy areas to respond, the team was soon

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Trees weighted down with ice obstruct road at the Fort Gibson Lake project. It is estimated that nearly $500,000 in damage occurred at Tulsa District parks.

> **"Emergency operations and our capability to react in an emergency is important for this nation. It ties very nicely with the Corps identified mission to support national economic development and security."**

Truck with two generators, fork lift and wire prepares to leave the Federal Staging Area outside McAlester Army Ammunition Plant, McAlester, Oklahoma.

Oklahoma Ice Emergency

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overseeing the installation of generators to maintain critical infrastructure.

Operations were guided from the State of Oklahoma Emergency Operations Center in Oklahoma City where state and Federal agencies involved in disaster response were headquartered. There, Kerri Stark served as emergency power subject matter expert while Kent Dunlap and Louis Holstead were emergency power action officers.

Jan Hotubbee, mission manager, and the rest of the field team deployed to McAlester, Oklahoma, one of the hardest hit areas. A vacant building and some land immediately outside the entrance to the McAlester Army Ammunition Plant became the Federal Staging Area. Later, a Deployable Tactical Operations Center from Fort Worth arrived to provide satellite communications for the operation.

Soldiers from the 249th Engineer Battalion headquartered at Fort Belvoir, Virginia, arrived as did more than 100 generators from the FEMA logistics center at Fort Worth, and workers, trucks, and equipment with the Corps contractor, IAP Worldwide Services.

"Prime Power" soldiers made electrical assessments following priorities set by the state. Then, contract employees placed and powered up generators at water treatment facilities, sewage plants, community centers, distribution points for water and food, nursing homes, shelters, etc. Three were placed at the ammunitions plant itself to allow a critical munitions shipment to be met. Once the generators were installed, daily maintenance visits were made to assure reliable fueling and service.

At the Pittsburg County Health Department, formula and vaccines had to be kept at certain temperatures and services had to continue through the weekend. The nurse manager said, "I can tell you that the response was excellent. They did an assessment of the building one evening. The next day, they brought the generator. We appreciated it so much. I was impressed that it came out with fuel and an electrician. They off-loaded it; they wired it. They come back every day. They were so nice; they bent over backwards to make the thing work for us."

Just up the street, another FEMA generator powered the First Baptist Church where a shelter was established. The building was housing 40 people full time, and church members were feeding 700 people a day.

The units are scattered throughout the storm-damaged area powering crucial services to sustain life and health.

Pete Navesky, Chief of Emergency Operations for Tulsa District, said, "This event occurred as the equivalent of a no-notice event, so none of the emergency power resources were pre-staged as would typically occur prior to a hurricane landfall. As a result, the mission was under a great deal of scrutiny and political pressure until generator installation began in earnest on Wednesday, Jan. 17. The results were very appreciated by the impacted citizens."

It may be impossible to do anything about the weather in Will Rogers' home state, and when people talk about the blizzard of "aught seven," they might not mention the Corps, but those who responded will never forget and those who were warmed and fed thanks to the power provided by the generators will know that Federal responders made a big difference in the aftermath.

Louis Holstead (left) and Kent Dunlap were the power action officers. They worked in the Emergency Operations Center in Oklahoma City where all the state and Federal agencies were established.

Kerri Stark of the Tulsa District (left) and Kelli Cassels, FEMA Operations Chief, look over the generator data. Stark was the ESF#3 assistant team leader and subject matter expert responsible to ensure requests for generators were properly executed.

Arkansas River Basin

This section offers a brief look at some of the ongoing and upcoming projects of the Tulsa District.

Arkansas City Aquatic Ecosystem Restoration

Section 206, Water Resources Development Act of 1996, as amended

Feasibility Study

The city of Arkansas City is located at the confluence of the Arkansas and Walnut Rivers in southeast Kansas in Cowley County, approximately 122 miles northwest of Tulsa, Oklahoma.

The proposed restoration site is located within the historic floodplain of the Walnut River. The recommended plan would improve various types of wildlife habitat over a total of 122 acres. Borrow pits would be modified to be productive fish habitat. Constructed wetlands would provide habitat to numerous types of wildlife as well as improve water quality. Species diversity and carrying capacity would be restored to bottomland hardwood stands and prairie grasslands in the project area.

Fiscal year 2007 efforts are focused on completion of feasibility study efforts that will detail the most cost effective plan to restore this historic floodplain.

Arkansas River Corridor

Section 22, Water Resources Development Act of 1974, Public Law 93-251 (Planning Assistance to States Program)

Study

The Arkansas River is a valuable water resource that provides opportunities for redevelopment to promote economic development, ecosystem restoration, and other initiatives that would improve the quality of life for many citizens living in the Tulsa metropolitan area as well as visitors to the region.

In 2005, we completed a comprehensive Master Plan that sought to integrate economic development with ecosystem restoration. This plan identifies specific features and locations based on extensive public outreach efforts and technical analysis of the feasibility of the community's vision.

Tulsa County is the cost share sponsor providing non-Federal funding and coordinating with stakeholders as we move through Phase III. In this phase, we will formulate ecosystem restoration features, model potential weir designs, and conduct comprehensive natural and cultural resources investigations. Primary products from this phase include an ecosystem restoration plan, recommendation for holistic approach to weir operation as well as design recommendations and baseline ecosystem data. Two low water dams have been identified as major components of the comprehensive ecosystem restoration plan. They are necessary as hydropower production at Keystone Dam has negatively impacted this riverine ecosystem. Tulsa District will work with the Tennessee Valley Authority to model impacts of various dam designs on the aquatic ecosystem and public safety.

This project has generated great excitement within Tulsa County as well as the region. Other municipalities are closely watching the successes of our partnerships with both public and private stakeholders. Tulsa District is committed to providing support to the Tulsa Community as they seek to integrate economic development with ecosystem restoration.

The Arkansas River Corridor Master Plan web site and documents are hosted on the INCOG web site.

Augusta Levee Local Flood Protection Project

Section 205 of the Flood Control Act of 1948, as amended (Continuing Authority - Flood Control)

Pre Construction Engineering & Design

Augusta is about 19 miles east of Wichita, Kansas. The Whitewater River runs through Augusta, Kansas, to its confluence with the Walnut River.

The original levee was constructed in the 1920s and '30s through private and public sponsorship and was incorporated into the Federal Levee Inspection Program in the 1940s.

The November 1998 flood damages were caused primarily by the Whitewater River breaching of the city's levee system at several locations along the west side of Augusta. The recommended plan would be to raise and extend the existing levee to provide a 500-year level of flood protection.

Fiscal year 2007 efforts are focused on completion of construction plans and subject to the availability of funding and relief from the moratorium on execution of Project Cooperation Agreements. We could initiate construction activities on this project this fiscal year.

Bartlesville Water Supply

Section 22, Water Resources Development Act of 1974

Study

On May 15, 2006, Mayor Julie Daniels and Col. Kurka signed the cost share agreement for this study. The agreement was amended in January 2007 to allow the Oklahoma Water Resources Board to provide the cash portion of the non-Federal cost share. It is a 50% Federally funded study that will use the latest technology to project water supply needs for the

Hulah Lake during the drought of 2002. With information from the study, Bartlesville, Oklahoma, can make informed decisions to reduce impacts from similar drought situations.

next 50 years. Once that data is clearly established, the study team will analyze alternatives such as: the cost of storage and conveyance from Kaw Lake and the impacts for reallocating from the flood pool on Hulah and/or Copan Lakes. Cost estimates will be an integral part of this study.

Primary stakeholders in this study are the city of Bartlesville, the Oklahoma Water Resources Board, the Nature Conservancy, and rural water districts.

Another closely related project is the Hulah/Copan Reallocation Study. This study was signed by the Tulsa District Commander on April 26, 2006 and has been sent to Corps Headquarters for review/approval. Water supply contracts totaling just over 12 million gallons per day accompanied the report.

Big Lake Habitat Restoration, Oklahoma

Section 1135(b) of the Water Resources Development Act of 1986, as amended (Continuing Authority - Habitat Restoration)

Feasibility Study

Big Lake is a locally-owned lake located along the Verdigris River in Rogers County, Oklahoma, about 10 miles northeast of Tulsa and approximately 15 miles downstream of Oologah Lake and Dam. Due to the Robert S. Kerr Navigation channel and impoundment of Oologah Lake, over 700 acres of forested wetlands are no longer subject to annual flooding.

The recommended plan would improve various types of wildlife habitat for 700 acres of bottomland hardwood forest, restore 100 acres of bottomland hardwood wetlands and an oxbow lake, and simulate natural flooding to the area.

In December 2006, environmental compliance efforts were completed for the study effort and the final report was approved by Corps higher authority. Contingent upon funding, construction efforts could be initiated in fiscal year 2007.

Blackwell Lake Clearing and Snagging

Section 208 of the 1954 Flood Control Act, as amended by the 1974 Water Resources Development Act

Project Design Analysis Underway

Blackwell Lake is located in Kay County, Oklahoma, near Braman, and is a primary recreational feature in this part of Oklahoma.

Due to the ice storm of 2001, a heavy load of logs and other debris have accumulated upstream of the Lake Blackwell Dam and spillway. The log jam is blocking access to the gate controls of the dam structure and has completely overwhelmed the normal maintenance capacity of the Lake Blackwell Trust Authority. The log jam has also significantly increased the flooding risks of the residential community immediately upstream (approximately 200 homes).

The recommended plan of improvement would be to remove the logjam and properly dispose of the accumulated material.

Fiscal year 2007 activities are focused on completion of the project design report activities. Contingent upon funding, construction efforts could be initiated this year.

Candy Lake Land Sale

Water Resources Development Act of 1999

Land Sale

Candy Lake was deauthorized by publication in the Federal Register in December 1996. Water Resources Development Act (WRDA) 1999 authorized the Corps to sell the Candy Lake project lands at fair market value to the previous landowners or their descendants. The Corps contracted with General Services Administration (GSA) to conduct a land appraisal and identify former landowners or their

The Candy Lake area of Oklahoma.

descendants and complete the Environmental Assessment.

In 2005, we completed the Environmental Assessment and initial coordination with the State Historic Preservation Officer. Offers to purchase were sent to appropriate parties.

Title transfers for the first 11 Candy Lake tracts were signed by the Assistant Secretary of the Army for Civil Works (ASA-CW) and sent back to Tulsa District in June 2006. Deeds were filed in Osage County on June 14, 2006 to complete these sales. Funding from these initial sales were used to complete the cultural resource investigation. The cultural resource report is currently being coordinated with the State Historic Preservation Officer in February 2007. Title transfers for those remaining tracts are scheduled for fiscal year 2007.

Parcels for which bids were not received from former owners or their descendants were offered to the Bureau of Indian Affairs; however, they did not express an interest to accept ownership. These tracts are going through further Federal screening by the GSA. If they are not picked up by another Federal agency, they will be identified for disposal as surplus property.

Canton Lake, Oklahoma (Dam Safety)

Flood Control Act approved June 28, 1938 (Public Law 761); Flood Control Act approved July 24, 1946 (Public Law 526) (irrigation storage); Flood Control Act approved June 30, 1948 (Public Law 858); and the Water Resources Development Act of 1990 (Public Law 101-640) (water supply storage)

Under Construction

This is a multi-phase Dam Safety project with the first phase consisting of a Spillway Stabilization Construction Project in which 64 anchors were installed into the spillway to correct stability deficiencies. The first phase contract was awarded to Nicholson Construction Company for $4,525,000 on November 17, 2005 and was completed on October 22, 2006.

The next phase of the project, which will occur in fiscal year 2007, consists of relocating highway 58A, relocating existing utilities and the development of plans and specifications for the channel excavation which is planned to occur in fiscal year 2008.

Cowskin Creek, Local Flood Protection Project, Wichita, Kansas

Section 205 of the Flood Control Act of 1948, as amended (Continuing Authority - Flood Control)

Pre Construction Engineering & Design

The Cowskin Creek Basin is located in the western part of Wichita, Kansas. This basin has sustained significant recurring flooding problems directly impacting residential areas. The November 1998 flood resulted in significant damage to about 200 homes and many businesses, some of which were damaged beyond 50% of their value.

This project is currently in the final stages of development of the construction contract plans and specifications phase. The recommended plan of improvement would include channelization of a portion of Cowskin Creek with construction of an overbank area to convey the high flows during a flood event.

Subject to the availability of funding and relief from the moratorium on execution of Project Cooperation Agreements, we could initiate construction activities on this project this fiscal year.

Crow Creek Aquatic Ecosystem Restoration

Section 206 of WRDA 1996, as amended (Continuing Authority - Aquatic Ecosystem Restoration)

Feasibility Study, Planning

Crow Creek is located in a mixed residential and commercial area of central Tulsa, Oklahoma. This ecosystem restoration project will focus on riparian corridor habitat restoration and wetland creation along Crow Creek in Tulsa, Oklahoma.

Project features could include outdoor classrooms and multi-purpose mainte-

nance trails that will also provide public access for nature related recreation.

Fiscal year 2006 efforts were focused upon completion of the preliminary assessment which was provided to the sponsor in August 2006.

Subject to the availability of funds, fiscal year 2007 efforts could be used to complete the detailed feasibility report.

East Tulsa County, Haikey Creek Watershed, Oklahoma

Section 205 of the Flood Control Act of 1948, as amended (Continuing Authority - Flood Control)

Feasibility Study Phase

The Haikey Creek watershed is approximately 9 miles long and a maximum of 8 miles wide, originating in Broken Arrow, Oklahoma, flowing generally southward within east Tulsa County through portions of the cities of Tulsa and Bixby. The drainage area contains approximately 37 square miles and is largely urbanized in nature.

The city of Bixby requested assistance to reduce flooding and improve riparian habitat in the lower reach of Haikey Creek.

Potential improvements could consist of channelization of Haikey Creek and/or construction of a levee approximately 2-feet to 5-feet high.

Fiscal year 2007 efforts are focused on completion of feasibility study efforts which will recommend the most cost-effective plan of improvement.

Grand (Neosho) River Wetlands and Bottomland Hardwoods Ecosystem Restoration, Oklahoma

Section 206 of WRDA 1996, as amended (Continuing Authority - Aquatic Ecosystem Restoration)

Planning

This ecosystem restoration project will focus on wetland bottomland hardwood habitat restoration and would extend along the Neosho River upstream of Miami, Oklahoma.

Project features could include outdoor classrooms and multi-purpose maintenance trails that will also provide public access for nature related recreation.

In December 2006, The Natural Resources Conservation Service (NRCS) at Stillwater completed a preliminary assessment report detailing possible improvements that could be accomplished.

Subject to the availability of funds, fiscal year 2007 activities will be focused upon completion of the Preliminary Restoration Plan report and initiation of feasibility study efforts.

Grand Lake Comprehensive Study

Section 449 of the Water Resources Development Act of 2000

Study

Grand Lake became operational in 1941 and its purposes include hydroelectric power. It is operated by the Grand River Dam Authority (GRDA) and flood control is directed by the Corps. Grand Lake is located in the Grand (Neosho) River basin (a sub-basin of the Arkansas River basin) and is an integral component of a system flood control operation consisting of 11 principal reservoir projects in the Arkansas River basin. The system operation of the 11 principal reservoirs also benefits the McClellan-Kerr Arkansas River Navigation System.

Grand Lake was designed and constructed by the GRDA, an agency of the State of Oklahoma, and initially had a single purpose of hydropower production. In order to include Grand Lake as part of a comprehensive multi-purpose plan for the Arkansas River, the Flood Control Act of 1941 authorized the Corps to manage the flood control features. The flood control pool limits were established from elevation 745.0 to 755.0. Flood flowage easements were acquired up to elevation 750.0 by the State of Oklahoma. Other Federal agencies acquired flood flowage easements from elevation 750.0 to 760.0. The flowage easements are now held by the Corps.

In response to public concerns, Congress established Section 560 of the Water Resources Development Act (WRDA) of 1996 which authorized the Corps to conduct a study that considered the combined operating purposes of flood control and hydropower. The September 1998 Grand Lake, Oklahoma, Real Estate Adequacy Study report documents that areas were found around the lake where, using current criteria and based on current lake operations, additional flowage easements would be recommended if Grand Lake was a “new” Corps project.

The most recent legislation, Section 449 of the WRDA of 2000, directed the Corps to further evaluate the backwater effects specifically due to flood control operations on land around Grand Lake. Activities in fiscal year 2005 included development of a working draft Project Management Plan for potential near-term activities and coordination with Ottawa County Commissioners, Grand River Dam Authority, and Congressional interests. Fiscal year 2006 funds were used to complete a letter report in May 2006. Following a review by our Headquarters office, the report will be reviewed by the Assistant Secretary of the Army for Civil Works (ASA-CW). If the ASA-CW determines that Federal actions have been a significant cause of backwater effects, feasibility study activities would be initiated at full Federal expense in accordance with Section 449 language. Potential future feasibility phase activities would be dependent on annual Congressional funding. The purpose of the feasibility study would be to identify cost-effective solutions to the flooding problems consistent with current Federal policies. Categories of alternatives to consider include structural measures (such as

This is an example of a typical eroded bank along the Neosho River. Sedimentation occurs throughout the watershed and stream and river bank erosion is an issue to be addressed in the feasibility study.

levees), nonstructural measures (such as flood proofing and buyouts of flood prone structures), changes in the system operation, and combinations of measures.

A strategic activity to address minor flood events is the flood control pool releases consistent with the current system operating plan. While there is only limited and preliminary data at this time to confirm the effectiveness, it is likely that this approach reduces flooding related to the more frequent (minor/moderate) flood events. It is important to note, however, that large flood events, like those frequent in the late 1980s and 1990s, significantly overwhelm available flood storages.

Grand/Neosho Ecosystem Restoration Study

Section 208, Flood Control Act of 1956

Study

The study area consists of the 12,500 square-mile Grand/Neosho River Basin in northeastern Oklahoma and southeastern Kansas. Flooding around Grand Lake, sedimentation problems in John Redmond Reservoir, and the 1,800 square miles of uncontrolled drainage areas have increased the need for a basin-wide study to address flooding and floodplain management problems and opportunities and ecosystem improvements associated with aquatic habitats, wetlands, and watershed corridors.

A feasibility cost share agreement was executed with the Kansas Water Office on September 2006 for the John Redmond Reservoir Study. This interim study will focus on the ecosystem degradation that has occurred in John Redmond Reservoir. This degradation is largely a result of sedimentation and nutrient loading. Other local issues such as the log jam and an assessment of dredging as an alternative are included in the multi-year study.

Marion Reservoir could be the second of several interim studies to be conducted under the Grand/Neosho Watershed Authority. Funds would be used to execute agreement and initiate study. Dependent upon funding received, efforts in fiscal year 2007 could focus on modeling, formulation of alternatives and collaboration efforts.

The John Redmond study is the first of several interim studies to be conducted under the Grand/Neosho authority. Funds are being used to execute feasibility cost share agreement and initiate study. Depending on funding received, efforts in fiscal year 2007 will primarily be focused on data gathering and modeling, formulation of alternatives, and collaboration efforts.

Hulah/Copan Reallocation Study

Study

The Hulah/Copan Reallocation report was signed by the Tulsa District Commander and sent to Corps Headquarters on April 26, 2006. The District expects about a year for the review and approval to occur. This report and its accompanying contracts identify an additional 6 million gallons per day (mgd) for the city of Bartlesville. One mgd will be contracted from existing storage but this study identified an additional 5 mgd to be reallocated to water supply from water quality.

Severe drought conditions in 2001-2002 caused Hulah Lake to lose a considerable portion - over 80% - of its conservation pool. Bartlesville ceased using Hulah Lake for water supply on April 18, 2002 and, on an emergency, temporary basis, began withdrawing water from Caney River made available from Copan Lake water quality storage releases.

The study examined several alternatives to maintain consistent water supply for Bartlesville and surrounding communities through 2035. The report recommends reallocating water from water quality storage to water supply storage. Implementation of this action will cause no adverse impacts to biological or cultural resources. The hydrology analysis indicates that there would be no affect on downstream flooding. Because this is less than 15% of the total usable storage, the reallocation may be approved by the Chief of Engineers.

Joe Creek Ecosystem Restoration Project, Tulsa, Oklahoma

Section 1135, WRDA of 1986 (Continuing Authority - Habitat Restoration)

Feasibility Study

Joe Creek is a tributary to the Arkansas River at Tulsa, Oklahoma. The Joe Creek Local Protection Project was constructed under the authority of Section 205 of the 1948 Flood Control Act. A majority of the improved channel is concrete lined.

The proposed project will focus on improvements to the riparian stream corridor

habitat that was impaired when the original flood control project was constructed.

In December 2006, a draft formulation report was submitted to the sponsor, the city of Tulsa, for their review and approval.

Fiscal year 2007 activities are focused on completion of the detailed feasibility effort and, subject to the availability of funding, the plans and specifications phase could be initiated.

Lawton Wastewater Infrastructure

Section 219(f)(40), Water Resources Development Act of 1992 as amended

Pre Construction Engineering & Design

The project consists of constructing wastewater infrastructure for the city of Lawton, Oklahoma. Lawton is located approximately 100 miles southwest of Oklahoma City in Comanche County, Oklahoma.

The city is conducting a 20-year, three-phase $63 million sewer rehabilitation program in response to a consent order from the Oklahoma Department of Environmental Quality. The program involves total replacement of sewer pipelines and upgrading of other components. The services provided by the city's infrastructure includes off base housing for the Army at Fort Sill. The Corps participation in the overall project will be approximately $4 million.

The city will provide the construction plans and specifications and the Corps will conduct all contracting and construction administration services.

Ongoing activities include drafting of the Project Cooperation Agreement and finalization of the NEPA approvals. Construction is scheduled to begin in fiscal year 2008 and continue for approximately one year.

Dredging the McClellan-Kerr Arkansas River Navigation System channel, Oklahoma. Photo shows the dredge placing material inside the silt curtain to reduce turbidity in the river.

McClellan-Kerr Arkansas River Navigation System (MKARNS), AR & OK, 12-Foot Navigation

Section 136, E&WDAA, fiscal year 2004 (P.L. 108-137) (Construction 12 foot channel)

Under Construction

The McClellan-Kerr Arkansas River Navigation System is approximately 445 miles in length and consists of 18 locks and dams providing 9-foot depth inland navigation from the Mississippi River to Catoosa, Oklahoma. In 2005, the system carried 12.9 million tons of various materials to include petroleum products, wheat, chemicals, and steel to name a few.

This project would deepen the navigation channel to a minimum depth of 12 feet throughout the MKARNS thereby increasing the efficiency of the system. Deepening of the channel will be performed by a combination of techniques to include altering the flow management, constructing dikes and jetties and dredging the channel. This project also includes a significant environmental component to include creation of bottomland hardwood forests and high quality wetlands, as well as other environmental enhancements.

This project has a projected cost estimate of $165.5 million and is jointly managed by both Little Rock and Tulsa Districts. To date, $7.0 million was provided through a fiscal year 2005 congressional add to complete the Feasibility Study and the Environmental Impact Statement as well as to start dredging activities and construction of dikes and jetties.

During fiscal year 2006, dredging commenced and was completed at mile 348 in Pool 15 in Oklahoma as well as commencing construction of training structures in Pools 2 and 7 in Arkansas. Construction of a Least Tern Island with rock protection was also accomplished in

conjunction with the dredging activities in Pool 15. Design of river structures was accomplished in Pools 2, 7 and 5 as well as mitigation activities to include aquatic and terrestrial surveys were performed in both Oklahoma and Arkansas. A five year project plan was also developed for the project that includes an integrated project breakdown of activities and associated costs that has been vetted through the navigation stakeholders.

This project is not included in the fiscal year 2007 budget, though fiscal year 2006 carryover funds will be used to place stone structures to improve self scour in Arkansas, and the continuation of design of upland dredge disposal sites, and real estate efforts in Oklahoma. Once available funds are exhausted, no further work will be done on the deepening.

An example of a simple riparian buffer strip being evaluated in the Walnut River Basin Feasibility Study. The buffer is composed of trees nearest to the river and an outer grass buffer to reduce runoff velocities, retain eroded soils, and add value and diversity to the riparian ecosystem.

North Canadian River Aquatic Ecosystem Restoration Project, Oklahoma

Under Construction

The project is essentially complete and consists of the reestablishment of an aquatic wetland ecosystem corridor along the North Canadian (Oklahoma) River between Western Avenue and May Avenue in Oklahoma City. The restoration was accomplished by constructing about 26.5 acres of wetlands and related water control structures to manage the wetlands. The low-water dam near Western Avenue was constructed by Oklahoma City and creates a backwater pool with about 145 acres of open water aquatic habitat and provides a reliable source of water for the adjacent wetlands. Approximately 54 acres of bottomland hardwood and riparian trees along with native grasses were planted along both sides of the river to reestablish a contiguous riparian corridor. An irrigation system was installed to water the plantings.

Included in the project are two multipurpose maintenance trails consisting of a 12-foot-wide asphalt trail and a 6-foot-wide concrete trail.

Additional planning activities in 2007 will address future adaptive management measures, consistent with Federal criteria, to assure project compatibility with Oklahoma City's comprehensive plan for the Oklahoma River corridor.

Oologah Lake Watershed Feasibility Study, Oklahoma and Kansas

Section 206, Flood Control Act 1958; Resolution adopted on May 25, 1960 by the House Committee on Public Works

Study

The Verdigris River basin drainage area is approximately 4,300 square miles and is located in southeastern Kansas and northeastern Oklahoma. This basin is impounded to form Oologah Lake.

The study will address impacts of upstream development on aquatic and terrestrial habitat within the basin. Upstream development has also adversely affected the water quality at Oologah Lake which is a water supply source for the city of Tulsa.

In July 2006, we conducted a feasibility scoping meeting with Corps Headquarters. In early June, Tulsa District distributed the extensive "read ahead" package for the Headquarters team. The Kansas Water Office has expressed an interest in the study and the District is meeting with them to further discuss the option of Kansas Water Office becoming a cost share sponsor.

In fiscal year 2007, funds are being used to continue the feasibility study and detailed alternative analysis. Completion of the detailed analysis is dependent upon funding. This includes environmental, hydrological, and economic analysis. Preliminary design and cost estimation could also occur. Coordination with states, Federal and state agencies, and local stakeholders is imperative and a significant effort.

Sand Creek Ecosystem Restoration Project, Newton, Kansas

Section 1135 of WRDA 1986, as amended (Continuing Authority-Habitat Restoration)

Pre Construction Engineering & Design

The Sand Creek Ecosystem Restoration Project focuses improvements along Sand Creek within the city limits of Newton, Kansas. The Sand Creek local flood protection project was completed by the Corps of Engineers in April 1967.

The proposed project will focus on improvements to the riparian stream corridor habitat that was impaired when the original flood control project was constructed.

Fiscal year 2007 efforts are focused on completion of contract plans and specifications and initiation of the bank stabilization construction efforts.

Spavinaw Lake Watershed Feasibility Study

Section 208, Flood Control Act of 1965 (Public Law 89-298)

Study

Spavinaw Creek and its downstream impoundments, Eucha and Spavinaw Lakes, are severely impacted by nutrient loading and excessive algae growth as a result of agricultural practices in Arkansas and Oklahoma. Degradation of water quality has led to taste and odor problems, increased treatment costs, and the lakes' decreased recreational and aesthetic value. Together, Spavinaw and Eucha Lakes provide 47% of the water supply for the Tulsa metropolitan area. The Tulsa Metropolitan Utility Authority entered into the feasibility cost share agreement in June 2004.

Because of extensive ecosystem restoration work being done by the poultry industry in the watershed, this study is focused on in-lake solutions.

In fiscal year 2005, we completed alternative formulation and began analysis.

In August 2006, the Tulsa team prepared the package for a feasibility scoping meeting with Corps Headquarters.

In 2007, we will complete alternative analysis including engineering analysis, economics, and environmental studies.

U.S. Highway 83 Bridge, Erosion Control Project, Garden City, Kansas

Section 14 of the 1946 Flood Control Act, as amended. (Continuing Authority - Emergency Streambank Protection)

Pre Construction Engineering & Design, Completed

The U.S. Highway 83 Bridge Erosion Control Project is located in Garden City in western Kansas. Bank erosion associated with lateral migration of the Arkansas River is encroaching on the U.S. Highway 83 embankment and approaches to the bridge.

The value of the infrastructure at risk is approximately $5 million. The sponsor for this effort is the Kansas Department of Transportation.

Planning, engineering, and design efforts were completed in 2005. Construction efforts were initiated in September 2006 and completed in January 2007.

Walnut River Basin Feasibility Study

Flood Control Act of 1965, approved October 27, 1965; Public Law 89-295, HD 232, 89th Congress, 1st Session

Study

The Walnut River Basin covers about 2,000 square miles in southeastern Kansas. The Walnut River combines with the Arkansas River at Arkansas City, which flows across the Kansas-Oklahoma state line within about 10 miles of Arkansas City. The city of Wichita is located immediately west of the basin. The U.S. Fish and Wildlife Service (USFWS) estimates that Kansas has lost almost 50% of its wetlands since the 1980s, with the vast majority of the losses since 1950. The loss of these wetlands means urban and rural runoff previously "filtered naturally" before entering a watercourse now enters the stream directly. The result of past and continuing losses is both a reduction in area and ecological system viability due to fragmentation. Some of the measurable losses include wildlife density, reductions in animal and plant species, and significant reductions in water quality. At the request of the local sponsors, the feasibility effort is focused on a 230-square-mile watershed impounded by El Dorado Lake. The sponsors are the Kansas Water Office, Kansas Water Authority, and the city of El Dorado.

Study efforts include addressing opportunities to reduce sedimentation in El Dorado Lake, meeting the watershed total daily maximum load (TMDL) issues of sediment and eutrophication for the purpose of preserving existing water supply storage, and restoring riparian and aquatic habitat and ecosystem function in the lake and upstream watershed.

About a dozen state and Federal environmental agencies are participating as team members in the feasibility study. The feasibility study is identifying ecosystem resources, evaluating the system qualities, determining past losses and current needs, and evaluating potential restoration and preservation measures. Justified collections of measures found to be warranted and acceptable to the sponsor and the Federal Government will be recommended for implementation. In part, this plan will allow monitoring of implemented restoration measures which will provide opportunities to revise and improve the application of standard best management practices for this basin application. The Feasibility Cost Sharing Agreement was executed in November 2001.

The plan for completing the feasibility study in fiscal year 2007 includes formulation of watershed management opportunities, reservoir shoreline restoration, and a larger scale reservoir revitalization plan. A draft report is scheduled for submission in September 2007.

Webbers Falls Powerhouse Major Rehabilitation, Oklahoma

River & Harbor Act, approved July 24, 1946; Project Document HD 758, 79th Congress, 2d Session

O&M

The run-of-river power plant contains three 23,000 kilowatt (kW) inclined-axis Kaplan-type generating units with a total rated generating capacity of 60,000 kW. These turbines are the first tube turbines of this magnitude ever built and placed in operation. As a result, the design did not consider all of the factors that would be specific to the operation of slant-axis turbines; consequently, the project has been plagued with mechanical reliability problems during its operation. Currently, one turbine is non-operational; the two remaining units will continue to fail regularly until they can no longer generate power. The major rehab project will replace all three turbines resulting in $1.32 million of net benefits per month to the nation. In addition to rehabbing the turbines, the cranes will be rehabbed, the generators will be rewound, and turbine governors will be upgraded which will increase the capacity of the plant by 8.5%.

The Webbers Falls Powerhouse Rehabilitation project current cost is $65.2 million. In February 2001, the Corps Hydroelectric Design Center (HDC) recommended that the Ozark and Webbers Falls turbine replacements be combined into one contract, for a savings to the government and Federal power customer of over $5 million. The Webbers Falls Turbine Replacement contact was subsequently included in the Ozark contract as an option and awarded May 3, 2005. This option expires in 2008.

Fiscal year 2007 activities include the design and award of the turbine and generator bay bridge cranes as well as awarding the first turbine runner contract using customer funds.

Wister Lake Watershed Study

Resolution adopted January 28, 1955 by the Senate Committee on Public Works

Study

Wister Lake is an important water supply resource and provides important aquatic and terrestrial habitat for wildlife as well as recreational opportunities for citizens of Oklahoma and Arkansas. However, excessive sedimentation, turbidity and nutrient loading are impacting the aquatic ecosystem and water supply at Wister Lake. Wind and wave action combined with shoreline erosion and nutrient inputs contribute to habitat loss and degradation in the lake.

In 2006, we prepared the extensive package for the feasibility scoping meeting with Corps Headquarters and conducted preliminary alternative analysis.

In 2007, Tulsa District intends to complete feasibility scoping meeting with Corps Headquarters and continue study with detailed alternative analysis. This includes environmental, hydrological, and economic analysis. Preliminary design and cost estimation could also occur. If the project is sufficiently funded, the draft final report could be complete in the first quarter of fiscal year 2008.

Bowie County Levee

Energy and Water Development Appropriation Act (EWDAA) of 2001 and 2002

Pre Construction Engineering & Design

The Bowie County Levee is located near Texarkana, in Bowie County, Texas. The existing levee is 8.8 miles long and was built in 1913. The locally preferred plan, known as Alternative B, is the plan which will be constructed. This plan consists of restoring 6.0 miles of existing levee, constructing 4.0 miles of new levee, and constructing 1.4 miles of channel to divert Barkman Creek flows to the Red River.

Ongoing activities include resolution of significant archaeological issues and updating existing project design documents. Activities which will begin during the current year include approval of plans and specifications and drafting of the Project Cooperation Agreement.

The schedule, which still contains many variables, shows construction scheduled to begin in fiscal year 2010 and end an estimated two years later.

Kemp Lake Reallocation Study

Water Resources Development Act (WRDA) of 1986

Study

Lake Kemp is located on the Wichita River at river mile 126.7 in Baylor County, Texas. Lake Kemp was originally constructed in 1924 by the Wichita County Water Improvement District #1. The lake was constructed for the primary purposes of irrigation, water supply, and related uses.

The project is operated and maintained by the Wichita County Water Improvement District #2 and the city of Wichita Falls, Texas.

During the design and reconstruction of Lake Kemp, sedimentation was a key consideration. Design Memorandum No. 1 recommended raising the conservation pool after 40 years of operation to recover conservation storage lost to sedimentation. The latest sedimentation survey performed at Lake Kemp was in 1973, and it indicated an expected high level of sedimentation. In recent years, during drought conditions, the upper portions of Lake Kemp appear severely impacted by sedimentation.

Funding is expected to be received in 2007 as directed by the Texas Water Allocation Assessment. The funding would be used to begin the coordination process and action required by NEPA. Economic studies would begin, as well as a water supply demand and benefits study, and hydraulics and hydrology analysis. For the most appropriate reallocation, a sedimentation survey will need to be completed.

Mangum Geotechnical Study

Section 22 of the 1974 Water Resources Development Act

Study

Phase VI of the Mangum Lake Geotechnical study will focus primarily on cost estimates for the preferred dam alignment. We will also drill one bore hole and develop a piezometer at the site. A draft cost share agreement has been sent to the Oklahoma Water Resources Board.

The recently completed Phase V Study was comprised of a geotechnical investigation and stream loss study of the proposed dam site near Mangum, Oklahoma. The Oklahoma Water Resources Board was the cost share partner. Foundation conditions at the proposed Mangum Dam site, 2 miles southwest of Mangum on the Salt Fork of the Red River, appear to be favorable. Complex geology and karstic conditions impose limits on elevation, size and capacity of Mangum Lake. While the proposed dam site was proven feasible, the elevation would be 1550 feet (MSL) rather than the preferred 1560 feet. The difference in elevation reduces the acre feet of storage by half. Further study could be focused on additional characterization of foundation conditions, hydrogeology and water loss.

Red River Basin Chloride Control Project

This project was authorized for construction by the Flood Control Act of 1966, approved November 7, 1966, Public Law 89-789, SD 110; as modified by the Flood Control Act approved December 31, 1970, Public Law 91-611; and as amended by the Water Resources Development Acts of 1974 and 1976. The Water Resources Development Act of 1986, Public Law 99-662, amended the above authorization to separate the overall project into the Arkansas River Basin and the Red River Basin and authorized the Red River Basin for construction subject to a favorable report by a review panel on the performance of Area VIII.

Under Construction

The Red River Chloride Control Project is authorized to identify and implement measures to reduce naturally occurring brine emissions into several subbasins within the Red River Basin in northern Texas and southern Oklahoma. The project's primary purpose is to improve water quality for municipal, industrial, and agricultural uses along the Red River within Oklahoma, Texas, Arkansas, and Louisiana.

Portions of the Wichita River Basin Chloride Control ele-

ment, located in northwest Texas, have been constructed and have been in operation since 1987. Features completed and in operation include two low-flow collection dams, a pump station and diversion pipeline to the Truscott Brine Disposal Reservoir.

Recently, the state of Oklahoma expressed renewed interest in the Area VI element of the Red River project. Area VI is located on the Elm Fork of the North Fork of the Red River in Harmon County, Oklahoma.

Subject to the availability of funds, fiscal year 2007 efforts are focused on completion of contract plans and specifications at Area VII in Texas and continued reevaluation efforts for Area VI within the Elm Fork Basin in Oklahoma. In addition, baseline environmental monitoring activities will be continued.

Southeast Oklahoma Water Resource Study

1983 Supplemental Appropriation Act (PL 98-63)

Study

Although we received fiscal year 2006 funding for this project, it was not active. The Oklahoma Water Resources Board is the sponsor and they have requested an opportunity to rescope the study. The Tulsa District hopes to have the project restarted this fiscal year.

The cumulative effects of land use changes in the Kiamichi River Basin and other tributaries of the Red River have resulted in a loss of habitat for a number of aquatic species that are critical to the functioning of the riverine ecosystem. The Corps of Engineers was authorized to investigate water resource related problems in the study area which encompasses 29 counties in southeast Oklahoma, including the Kiamichi River Basin and other tributaries of the Red River.

The reconnaissance study found a Federal interest in ecosystem restoration in the Kiamichi River Basin. That study recommended proceeding to a cost shared feasibility study with the Oklahoma Water Resources Board as the local sponsor.

The reconnaissance report was certified in January 2001. The feasibility cost sharing agreement was signed with the local sponsor, the Oklahoma Water Resources Board, on July 10, 2001.

This is a complex 11-year feasibility study that will be conducted in 5 phases. Phase 1 involves rough estimates of the water available in the Kiamichi River and Little River basins for environmental restoration after other water needs have been met.

The next phase of this study will consist of an infrastructure assessment and water use impacts on this important natural resource.

Texoma Reallocation Study

Water Resources Development Act (WRDA) of 1986

Study

The Water Resources Development Act of 1986 authorized the Secretary to reallocate 300,000 acre feet of storage from hydropower to water supply storage at Lake Texoma. The law specified that 150,000 acre feet of storage would go to Texas and Oklahoma with 50,000 acre feet of the Texas total going to the Greater Texoma Utility Authority. The North Texas Municipal Water District (NTMWD) has expressed an interest in the remaining Texas storage.

The final public review of the Environmental Assessment (EA) on the Reallocation Report ended in January 2006. Responses to comments were completed in early May and the final EA, Reallocation Report, and water supply agreements were sent to Corps Headquarters in June 2006.

The final report recommends the reallocation of 300,000 acre-feet from hydropower to water supply. Water supply agreements for 105,000 acre-feet were sent with the report for review and approval.

Washita Feasibility Study

Red River and Tributaries above Denison Dam, Texas, Oklahoma, and New Mexico, House Resolution dated February 25, 1938; Senate Resolutions dated February 18, 1954 and June 19, 1962

Study

The Washita River is a tributary to the Red River in Oklahoma and flows into Lake Texoma. The reconnaissance study identified a Federal interest for flood damage reduction and ecosystem restoration. We identified a potential sponsor, the Oklahoma Department of Wildlife Conservation. They are interested in a study of golden algae. This algae can create a toxin which is deadly to fish. This toxin has the potential to have very serious impacts on the regional economy due to the striper fishery on Lake Texoma.

Presently, the Oklahoma Department of Wildlife Conservation is conducting the study without Corps involvement or Federal cost share. The Tulsa District will coordinate closely as the state study moves forward.

For updated project information, access our web site at:

http:\\www.swt.usace.army.mil

or call

1-918-669-7366